

AMENDMENTS TO THE CLAIMS:

This listing of claims replaces all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (Original) A method for use in removing a portion of a semiconductor chip having a frontside and a backside, the method comprising:

etching the backside of the semiconductor chip, the frontside including a first well with a first type of doping and a second well with a second type of doping;

monitoring the backside of the semiconductor chip during etching; and

determining when a first portion of the backside over one of the first and second wells differs from a second portion of the backside over the other of the first and second wells.
2. (Original) The method of claim 1, wherein the first portion of the backside differs from the second portion of the backside by the first portion having a first brightness that contrasts with a second brightness of the second portion.
3. (Original) The method of claim 2, further comprising:

stopping etching after determining that the first portion of the backside differs from the second portion.

4. (Original) The method of claim 3 wherein stopping etching comprises leaving a portion of the substrate.

5. (Original) The method of claim 4 wherein stopping etching comprises leaving a backside portion of the substrate having a thickness of approximately 1.5 microns to approximately 3.0 microns.

6. (Original) The method of claim 1, wherein etching comprises etching the backside of a silicon substrate.

7. (Original) The method of claim 6, wherein the silicon substrate comprises a first well with n-type doping and a second well with p-type doping.

8. (Original) The method of claim 6, wherein the silicon substrate comprises a first well with n-type doping and a second well with intrinsic silicon.

9. (Original) The method of claim 6, wherein the silicon substrate comprises a first well with p-type doping and a second well with intrinsic silicon.

10. (Original) The method of claim 1, wherein monitoring the backside comprises visually monitoring the backside.

11. (Original) A method for detecting an endpoint of an etch, the method comprising:
etching a backside of a semiconductor chip with a focused ion beam, the semiconductor chip having a frontside including an n-well and a p-well proximate the n-well, the n-well defining an n-well junction and the p-well defining a p-well junction;
observing the backside of the semiconductor chip during etching; and
determining when a portion of the backside over the n-well differs from a portion of the backside over the p-well.

12. (Original) The method of claim 11, wherein the first portion of the backside differs from the second portion of the backside by the first portion having a first brightness that contrasts with a second brightness of the second portion.

13. (Original) The method of claim 11, wherein the focused ion beam comprises a gallium focused ion beam.

14. (Original) The method of claim 13 wherein the gallium focused ion beam has a beam current of greater than approximately 8 nanoamperes.

15. (Original) The method of claim 11, wherein etching is performed using a xenon difluoride gas flux.

16. (Original) The method of claim 11, wherein etching comprises coupling the semiconductor chip to ground potential.

17. (Currently Amended) A method for etch endpoint detection, the method comprising:

etching a backside of a semiconductor chip, the semiconductor chip having at least one doped well formed proximate a frontside of the semiconductor chip;

monitoring the backside of the semiconductor chip during etching until a portion of the backside over at least one doped well becomes visible differs from a portion of the backside that is not over the at least one doped well; and

stopping etching after the doped well becoming visible.

18. (Original) The method of claim 17, wherein etching comprises coupling the semiconductor chip to ground potential.

19. (Original) The method of claim 17, wherein etching is performed using a focused ion beam.

20. (Original) The method of claim 19, wherein the focused ion beam comprises a gallium focused ion beam.

21. (Original) The method of claim 17, wherein etching is performed with a xenon difluoride flux.

22. (Original) A method for detecting an endpoint of an etch, the method comprising:
etching a backside of a semiconductor chip with a negatively charged beam, the semiconductor chip having a frontside including an n-well and a p-well proximate the n-well, the n-well defining an n-well junction and the p-well defining a p-well junction;
monitoring the backside of the semiconductor chip during etching; and
determining when a first portion of the backside over the n-well differs from a second portion of the backside over the p-well.

23. (Original) The method of claim 22, the first portion of the backside differs from the second portion by appearing bright in contrast to the second portion.

24. (Original) The method of claim 22, wherein the beam comprises an electron beam.

25 and 36. (Canceled)

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AMENDMENTS TO THE DRAWINGS:

The attached replacement sheets of drawings includes changes to Figs. 1-3 and replaces the original sheets including Figs. 1-3.

Attachments following last page of this Amendment:

Replacement Sheet (2 pages)